

BIAXIALLY-TEXTURED FILM DEPOSITION FOR
SUPERCONDUCTOR COATED TAPES

ABSTRACT

Methods for depositing, at a very high deposition rate, a biaxially-textured film on a continuously moving metal tape substrate are disclosed. These methods comprise: depositing a film on the substrate with a deposition flux having an oblique incident angle of about 5° to about 80° from the substrate normal, while simultaneously bombarding the deposited film using an ion beam at an ion beam incident angle arranged along either a best ion texture direction of the film or along a second best ion texture direction of the film, thereby forming the biaxially-textured film, wherein a deposition flux incident plane is arranged parallel to a direction along which the biaxially-textured film has a fast in-plane growth rate. Superconducting articles comprising a substrate, a biaxially-textured film deposited on said substrate by said methods above; and a superconducting layer disposed on the biaxially-textured film are also disclosed.